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D E C I S I O N
of 16 May 1997

Case Number: T 0027/91 - 3.3.4

Application Number: 84107722.5

Publication Number: 0134958

IPC: B32B 15/08

Language of the proceedings: EN

Title of invention:
Formable metal-plastic-metal structural laminates

Patentee:
THE DOW CHEMICAL COMPANY

Opponent:
Alusuisse-Lonza Holding A.G.

Headword:
Laminates/DOW CHEMICAL

Relevant legal provisions:
EPC Art. 54, 56, 83, 84

Keyword:
"Clarity and sufficiency of disclosure (yes)"
"Novelty (yes)"
"Inventive step (yes) no evidence for obviousness put forward
by the respondent (opponent)"

Decisions cited:
T 0626/91

Catchword:
-



Case Number: T 0027/91 - 3.3.4

D E C I S I O N
of the Technical Board of Appeal 3.3.4
of 16 May 1997

Appellant:
(Opponent)

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Representative:

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Respondent:
(Proprietor of the patent)

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Decision under appeal:

Decision of the Opposition Division of the
European Patent Office posted 9 October 1990
rejecting the opposition filed against European
patent No. 0 134 958 pursuant to Article 102(2)
EPC.

Composition of the Board:

Chairman: U. M. Kinkeldey
Members: D. D. Harkness
S. C. Perryman

Summary of Facts and Submissions

1. European patent No. 0 134 958 relating to steel-polyolefin-steel structural laminates was granted on the basis of 13 claims contained in European patent application No. 84 107 722.5.

The only independent claim, Claim 1, as granted reads as follows:-

"1. A steel-polyolefin-steel structural laminate comprising a core of polyolefin having tightly adhered to each side thereof a steel skin layer characterized in that each steel skin layer is from 50.8 μm to 508 μm thick, said laminate further having a ratio of core thickness to skin thickness of less than 9:1, and a total thickness of from 127 to 1651 μm ; the materials of construction of said polyolefin core and steel skins and the geometry of the laminate being such that the laminate has (1) a flexural stiffness at least 40 percent that of the solid steel of the skin layer of the lower flexural modulus having the same thickness as said laminate as measured by ASTM D790 on a 2.54 cm wide sample having a 10.16 cm span under three point loading conditions, (2) a density from 25 percent to 90 percent that of the average of the two solid steel skin layers, (3) as a measure of stretch formability a limiting dome height of at least about 60 percent of the limiting dome height of the solid steel layer of the lower ultimate elongation having the same thickness as the laminate, (4) the capability of being subjected to a no load oven test, subsequent to forming of said laminate, at a temperature of at least 87.8°C for a period of 30 minutes without delaminating, and (5) the

capability of being bent at room temperature to 90° to a critical radius without metal rupture, the critical radius, defined as the distance from the pivot point to the inner skin surface of the laminate, being about equal to the total laminate thickness."

Claim 11 as granted reads as follows:

"11. The structural laminate of any one of the preceding claims, wherein the core is tightly adhered to the metal skin layers by the use of an intermediate adhesive layer therebetween.

II. An opposition was filed against the granted patent raising objections under Article 100(a) and (b) EPC. Of the documents cited only the following remains relevant to the appeal proceedings:

(1) US-A-3 382 136

The Opposition Division held that the grounds of opposition mentioned in Article 100(a) and (b) EPC did not prejudice the maintenance of the patent, and that since lack of clarity of the claims did not constitute a ground of opposition under Article 100 EPC, the objections to clarity raised were not relevant when considering validity.

Having regard to the nearest prior art document (1) the subject-matter of the claims was regarded as novel as no example of a steel laminate was given and no mention of the specific layer thicknesses in combination with a steel outer layer was disclosed. Further, none of the other documents destroyed novelty.

Inventive step was also acknowledged on the basis of taking the problem to be solved as being to effectively to realise a steel-polyolefin-steel laminate where the

polyolefin layer is adhered directly (i.e. without an intermediate adhesive) which laminate is capable of being cold formed into an article. Document (1) was considered the closest prior art, and neither this nor any of the other documents were considered to render the invention obvious.

III. The Appellant lodged an appeal against the decision of the Opposition Division and argued essentially as follows:

The main claim was not new over document (1), as it was only the lack of clarity of its formulation that disguised the fact that the features of the main claim were already disclosed in document (1). The choice of a steel-polyolefin-steel laminate with the particular steel thicknesses stated, a core to skin ratio of less than 9:1, and the stated total thickness was not new over document (1) and would ensure meeting the requirements (1) to (5) specified in claim 1. Detailed calculations were submitted showing that the requirement (1) would inevitably be met by the choice of core to skin ratio of less than 9:1, and that the density requirement (2) would be met for core to skin ratios of between 9:1 and 0.25:1. The choice of particular ratios here would be dictated by economic considerations rather than technical reasons. Characteristics (3), (4) and (5) had necessarily to be fulfilled if the laminate was to be suitable for cold forming. Merely inserting into a claim as requirements the inherent properties that a cold-formable laminate had to have did not make the claim novel.

It was also criticized that the claim did not make clear whether features (1) to (5) were the inevitable results of the selection of the material and the choice of core:skin ratio, or whether additional measures were necessary to achieve features (1) to (5). If additional

measures were necessary, the description gave no guidance, the skilled person was left to find a suitable laminate by trial and error. The lack of any limits for the thickness of the polyolefin core in the claim was also criticised.

The Appellant also submitted calculations showing that with a core to skin ration of less than 9:1, the lowest overall laminate density achievable using even the lightest known polyethylene would be 26 percent of the equivalent thickness of steel sheet, so that the 25 percent in feature (2) could not be achieved.

Further the features (1) to (5) of the claim were merely design criteria to be fulfilled, and such criteria should not be considered as making any contribution to inventive step, relying in this connection on to a decision by the German Bundesgerichtshof (BGH, Urt. v. 12.12.1989 - X ZR 15/87 (BPatG) "Computerträger", GRUR 1990 vol. 8, page 594).

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- IV. The Appellant declined to attend oral proceedings arranged for 10 November 1994 and requested that the patent be revoked.

- V. The Respondent did not respond to the reasoning in the Statement of Grounds for the appeal and withdrew the auxiliary request for oral proceedings. He requested that a decision be taken to reject the opposition and to maintain the patent on the basis of the facts on file.

Reasons for the Decision

1. *Insufficiency and lack of clarity (Articles 83 and 84 EPC)*

1.1 In an opposition, or on appeal from the opposition division, an objection cannot be raised against a claim as granted on any ground of lack of clarity as such, as the grounds for opposition under Article 100 EPC do not include any equivalent to the requirements of Article 84 EPC that the claims be clear and concise and be supported by the description. Only if the lack of clarity is such that the subject matter is not patentable within the terms of Articles 52 to 57 EPC (Article 100(a) EPC), or the patent does not disclose the invention in a manner sufficiently clear and complete for it to be carried out by a person skilled in the art (Article 100(b) EPC equivalent to the requirement of Article 83 EPC) does there arise an objection to a claim as granted, that can be considered in opposition proceedings or on appeal therefrom.

1.2 One way to make out an objection of insufficiency under Article 100(b) EPC would be to show that the claim requires fulfilment of a parameter for which there was no method of measurement described or otherwise known (compare decision T 0626/91 of 5 April 1995, Reasons 3.2). However here it has not been argued that the skilled person could not make the necessary measurements to check whether any laminate made fulfilled the requirements of claim 1 or not. The Appellant has submitted calculations which show that with a core to skin ration of less than 9:1, the lowest overall laminate density achievable using even the lightest known polyethylene would be 26 percent of the equivalent thickness of steel sheet, so that the 25

percent in feature (2) could not be achieved. However the Board interprets the claim as covering only those laminates which simultaneously meet all its requirements, with there being no promise that the extreme values of each listed feature can actually be achieved. This calculation by the Appellant thus does not give rise to an Article 100(b) EPC objection of insufficiency.

1.3 The Board agrees with the Appellant that claim 1 is not as clear as would be desirable, in that neither from the claim nor from the description is it immediately apparent whether the requirements of the claim are independent from one another, or whether all the values of the individual requirements of the claim can be met by any embodiment at all. A claim should not pose a mathematical problem that first needs to be solved before it is apparent what its scope really is. This remains however something that can only be raised during prosecution of an application, or when introduced into a claim of a granted patent by amendment, when Article 84 EPC can be relied on.

1.4 There is no evidence before the Board from a person skilled in the art, saying that despite using all reasonable endeavours and relying on the information in the patent in suit, he was unable to make any laminate falling under claim 1 that he desired to make. The Appellant has merely argued that no guidance is given in the patent as to what measures to take if success is obtainable only with certain limited combinations, so that success would then only be achieved by trial and error. This is too hypothetical to make out an objection on the basis of insufficiency under Article 100(b) EPC.

1.5 The Board concludes that no objection of insufficiency under Article 100(b) EPC has been made out.

2. *Novelty (Article 54 EPC)*

2.1 The only document on which the Appellant relied when arguing lack of novelty was document (1) which relates to composite laminates of metal and plastic that are inelastic and are characterized by excellent stiffness and toughness, excellent weathering resistance, excellent cold-forming qualities, improved sound deadening properties, excellent flame resistance, relatively low thermal conductivity and excellent thermal stability (column 1, lines 11 to 18). At column 5, lines 35 to 38 it is stated:

"Any metal foil can be used for the purposes of this invention. Exemplary of suitable metal foils are those made from aluminum, copper, steel, brass or the like with aluminum being preferred..."

and further in lines 48 to 50:

"The particular metal foil used in any given application will depend on the end use of the resultant composite laminate."

In the discussion of the thermoplastic to be used starting in column 5, line 55 and continued in column 6, lines 1 to 34, there appear the statements:

"Illustrative of a suitable thermoplastics which can be used in this invention are the following: olefinic thermoplastic polymers such as polyethylene, polypropylene, copolymers and terpolymers thereof, for example, copolymers of ethylene and ethyl acrylate ...The preferred thermoplastic to be used is polyethylene...The particular thermoplastic core to be used in any given application will depend upon the end use of the resultant composite laminate."

2.2 The examples of document (1) with one exception, where the metal used is copper, relate to the metal being aluminium. For lack of novelty the jurisprudence of the Boards of Appeal requires there to be a clear and unambiguous disclosure of something meeting all the requirements of a claim. There is no such unambiguous disclosure of a laminate with a polyolefin core and a steel skin in document (1), the skilled person might choose to use steel with a thermoplastic core of some thermoplastic suggested other than a polyolefin.

2.3 The arguments put forward by the appellant rely on a more abstract approach to novelty than that adopted by the Boards of Appeal of the European Patent Office, in which approach the prior art document is first assessed for what it teaches the skilled person at a higher level of abstraction than that of the specific embodiments and explicit statements contained in it. This abstracted teaching is then compared to the teaching of the patent under consideration to assess whether the latter teaching is novel. With the less abstract approach of the Boards of Appeal of the European Patent Office, objections may have to be formulated as lack of inventive step which on the more abstract approach could be formulated as lack of novelty.

2.4 The Board concludes that no objection to novelty has been established.

3. *Inventive step (Article 56 EPC)*

3.1 While agreeing with the choice by the opposition division of document (1) as the closest prior art, the Board considers that the problem to be solved cannot be that stated by the opposition division. They took the problem to be solved as being to effectively to realise a steel-polyolefin-steel laminate where the polyolefin

layer is adhered directly (i.e. without an intermediate adhesive) which laminate is capable of being cold formed into an article. But claim 1 does not exclude the use of adhesive. Claim 11 dependent on claim 1, is specifically directed to the use of adhesive, and the description refers (see for example page 4, line 13) to the use of an adhesive layer for numerous embodiments. The problem to be solved must be something which everything falling within the claims solves.

3.2 The Appellant argued that the features (1) to (5) of the claim are merely design criteria to be fulfilled and that such criteria should not be considered as making any contribution to inventive step, referring in this connection to a decision by the German Bundesgerichtshof (see section III above). The unofficial head notes 1. and 2. of this read (translation by the board):

1. Recognition and listing of the requirements that a computer support should meet is a commercial activity, and not a design activity involving an invention.

2. If the design and construction of something meeting these requirements needed no invention, then the patent lacked inventive activity.

The Appellant referred in particular to point 2 of this decision (GRUR loc. cit. page 596). However from this it appears that it was of essence to the conclusion of the Court in that case that they made the finding that "To recognize requirements corresponding to the needs of an office, and to embody these in useful and economic products, is primarily a commercial problem, which depends on the respective situation of the relevant market." The Board here is unable to make an equivalent finding that the criteria for a laminate are primarily a commercial problem. It is thus not

necessary to discuss whether the legal reasoning followed in the "Computerträger" case is compatible with the jurisprudence of the Boards of Appeal.

3.3 The arguments the Appellant made as to lack of novelty in view of document (1), appear to the Board more appropriately classified as arguments relating to lack of inventive step. The problem to be solved could be formulated as putting into practice the suggestion of making a laminate with the two outer laminae of steel. The Board could accept that it would be obvious for the skilled person to combine this steel laminae with the stated preferred thermoplastic of document (1), polyethylene. What the Board would then expect for the case of obviousness to be made out, is evidence put forward by the respondent, being the opponents carrying the burden of proof for their case in view of obviousness, that a skilled person in the art, relying on the teaching of document (1) would have made a range of steel-polyethylene-steel laminates of different skin and core thicknesses suitable for the purposes he had in mind, and that measurements showed that at least some of these met all the parameters required by the patent in suit.

3.4 The question of what a skilled person would have done to solve a stated problem must always be a matter of conjecture, on which evidence can only give the Board guidance. However where a claim refers to certain parameters that should be fulfilled, evidence can be given that if a certain construction is made, then this fulfils the requirements of the claim. The Board should not, however, be left to speculate both as to what a skilled person would have done, and as to whether this would indeed fulfil the requirements of the claim.

3.5 In this case neither the appellant nor the board can rely on information in the patent in suit to show that a particular construction will meet the requirements of the claim, as the patent in suit does not make clear what constructions will inevitably meet the requirements of the claim. The virtual absence of any discussion of the technical significance of the requirements of claim 1, does not allow the Board to make any realistic assessment of how likely it is that the requirements of the claim would be met by someone not deliberately seeking to do so.

3.6 The Board in this case lacks the evidence necessary to decide whether or not something falling within claim 1 is derivable in an obvious manner from document (1) or not, the only document on the basis of which the patent is still attacked. In an opposition and on appeal therefrom, it is up to the opponent to make out a case of obviousness. The Appellant here has not done so, and accordingly the appeal must be dismissed.

Order

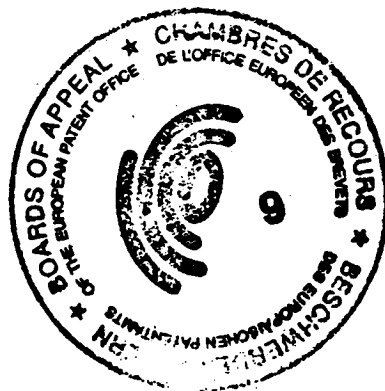
For these reasons it is decided that:

The appeal is dismissed.

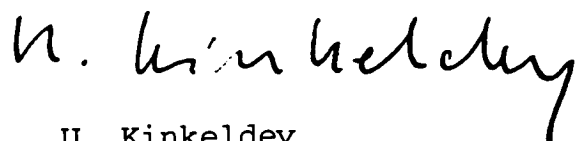
The Registrar:



A. Townend



The Chairwoman:



U. Kinkeldey

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